



Traffic Signal Preemption for Snowplows: A Survey of Practice in Northern States

Prepared for
Bureau of Highway Operations
Division of Transportation System Development

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Request for Report

Traffic signal preemption is a system that allows the normal operation of traffic lights to be preempted, often to assist emergency vehicles. The key advantages of signal preemption include the ability to reduce response time for emergency services and to increase safety on the road. The WisDOT Bureau of Highway Operations asked us to locate and document evidence of the use of signal preemption for snowplow operation. We were asked to contact the states of Washington and Illinois as part of our research, to verify word that Washington state and several Illinois local governments may allow signal preemption for snowplows.

Summary

To locate pertinent **Practices**, we searched the Web sites of AASHTO, APWA, ITE, the National Association of County Engineers and TRB and contacted those organizations. We also searched TRIS Online, FHWA's road weather publication database, state DOT Web sites and the Internet at large. Additional contacts included FHWA; the Illinois, Iowa and Washington State DOTs; and Global Traffic Technologies, which markets 3M's Opticom signal preemption technology. We also posted queries on the international Snow and Ice listserv and the Iowa APWA Shoptalk listserv.

Our findings suggest that there is currently limited use of signal preemption technology for snowplows:

- **Illinois.** State vehicle statutes allow the use of signal preemption devices on vehicles used for snow removal. The devices may be used during a snow emergency to extend the duration of a green light. Staff at Illinois DOT and the Lake County Division of Transportation said they were not aware of any counties or municipalities in the state that are using preemption for snowplows.
- **Iowa.** We identified three Iowa municipalities that allow preemption for winter maintenance vehicles: the cities of Bettendorf, Clive and Dubuque. At one time, Iowa DOT explored the possibility of obtaining preemption for IDOT snowplows that maintain highways in cities, but did not reach agreement with the cities.
- **Washington.** WSDOT regional maintenance managers said they were not aware of any counties or cities in the state using preemption for snowplows. The managers also indicated that they do not support implementing this type of preemption in the state.

At the time of publication, we had received no responses from our information query posted on the Snow and Ice listserv. We will forward any responses we receive to the Bureau of Highway Operations.

Practices

Illinois DOT

Contact: Aaron Weatherholt, Engineer of Traffic Operations, (217) 782-2076, aaron.weatherholt@illinois.gov
“Traffic control signal preemption for snow removal vehicles is addressed in Illinois by the Illinois Vehicle Code [see below]. I checked with both of our northern Illinois districts and neither is aware of any local agency using the preemption. In fact, our Chicago district strongly opposes the practice.”

Illinois Compiled Statutes, Illinois Vehicle Code (625 ILCS 5/)

<http://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=062500050HCh%2E+12+Art%2E+VI&ActID=1815&ChapterAct=625%26nbsp%3BILCS%26nbsp%3B5%2F&ChapterID=49&ChapterName=VEHICLES&SectionID=59766&SeqStart=124400000&SeqEnd=126900000&ActName=Illinois+Vehicle+Code%2E>

Scroll to:

625 ILCS 5/12-601.1

Sec. 12-601.1: Traffic control signal preemption devices

(a) As used in this section, “traffic control signal preemption device” means any device, either mechanical or electrical, that emits a pulse of light or other signal that, when received by a detector attached to a traffic control signal, changes that traffic control signal to a green light or, if the traffic control signal is already green, extends the duration of the green light.

(d) Installation of a traffic control signal preemption device is permitted on the following vehicles, and operation of the device is permitted as follows:

(8) Vehicles used for snow removal owned by any political subdivision of this State, operated either by the political subdivision or its lessee or agent, when used during a snow emergency in combination with yellow or amber oscillating, rotating, or flashing lights, when used to extend the duration of an already green light.

Iowa DOT

Contact: Dennis Burkheimer, Winter Operations Administrator, (515) 239-1355, Dennis.Burkheimer@dot.iowa.gov

“I’m not aware of any state DOT that utilizes snowplow signal preemption in their operations. Most of us are involved in freeway and highway operations as opposed to the city type of driving. Iowa DOT did look into it a few years ago because we have a couple of locations that have some operations in town, but the cities weren’t in favor of giving us the capability to communicate with their traffic signals. We usually have an agreement with the cities or counties that our highways run through, that they take care of the highway system in town, especially in those areas where a highway runs through the heart of town and is posted with numerous stop signs.

“I do think that signal preemption is a good capability for snowplows to have, especially if they’re operating in an area with a lot of stop-and-go traffic. If an operator is in stop-and-go traffic and doesn’t have a good ground-speed-control spreader on the back of the truck, the spreader may continue dispensing deicing materials when the truck stops. Giving the truck a green light would help ensure uniform application of materials, reduce wear and tear on the truck, and help the operator get the roads cleaned faster.”

Iowa Municipalities

(Courtesy of Bret Hodne, Des Moines Superintendent of Public Works, who posted a query on the Shoptalk listserv)

City of Bettendorf

Contact: Wally Mook, Director of Public Works, (563) 344-4055, wmook@bettendorf.org

“Bettendorf has preemption devices on all snowplow trucks. The devices can change the traffic signal, but they have a lower priority than emergency vehicles such as ambulances and fire trucks. We also have preemption devices on our transit buses, but they can only extend the signal, not change it. If an emergency vehicle and a snowplow come to an intersection from different directions and both try to use their preemption device on the traffic signal, the snowplow will be overridden by the emergency vehicle.”

City of Clive

Contact: Bart Weller, Public Works Director, (515) 223-6231, bweller@cityofclive.com

“Clive uses them and has a written policy on their use.” (See [Appendix A](#).)

City of Dubuque

Contact: John Klosterman, Street Maintenance Manager, (563) 589-4263, Jkloster@cityofdubuque.org

“We have preemption equipment installed on all our snow and ice control trucks. With our equipment we are only allowed to hold a green light, not change a signal from red to green the way police and fire can.”

Also see:

2007 Iowa Code

<http://www.legis.state.ia.us/IACODE/> (click “2007 Iowa Code” and type “321.260” in the first search field)

Section 321.260: Interference with devices, signs, or signals – unlawful possession – traffic signal preemption devices

3. a. A person shall not sell, own, possess, or use a traffic signal preemption device except as permitted in connection with the lawful operation of an authorized emergency vehicle as defined in section 321.1 or as otherwise authorized by the jurisdiction owning and operating an official traffic control signal.

Washington State DOT

Contact: Pat Moylan, Northwest Region maintenance manager, (206) 440-4655, MoylanP@wsdot.wa.gov

“In this region, we haven’t really considered signal preemption for snowplows and I’m not aware of any communities that have implemented it. In the Seattle area, at least, we just don’t get that much snow. While we haven’t talked about preemption in particular, we have looked for ways to try and improve the visibility of our snowplows.

“I checked with the WSDOT maintenance managers in the five other regions to see whether they’ve ever considered signal preemption for snowplows, and gathered some comments (see Additional Comments below). On the whole, I’d say that we do not support the idea of implementing it in the state.”

Additional Comments:

Harold White, Eastern Region Maintenance and Traffic Engineer:

“There would be very little benefit in time savings to offset the disruption to traffic flow from the preemption. We are having a difficult enough time getting emergency responders not to activate the preemption for nonemergencies. Transit is also looking for preemption, which just adds to the possible overuse. I don’t support preemption for snowplows.”

Rick Sjolander, Southwest Region Maintenance and Operations Manager:

“This issue has come up before. Most of the time (99 percent) snowplows are operating during normal conditions. Signal preemptions are for emergency operations. I don’t think our work applies nor do I support this idea.”

Also see:

Revised Code of Washington, Section 46.37.670

<http://apps.leg.wa.gov/RCW/default.aspx?cite=46.37.670>

Signal preemption devices – Prohibited – Exceptions

(1) Signal preemption devices shall not be installed or used on or with any vehicle other than an emergency vehicle authorized by the state patrol, a publicly owned law enforcement or emergency vehicle, a department of transportation, city, or county maintenance vehicle or a public transit vehicle.

(2) This section does not apply to any of the following:

(e) Department of transportation, city, or county maintenance personnel while performing maintenance.

CITY OF CLIVE



Clive Public Works Low Priority Preemption Policy

A. Definition

Traffic Signal Preemption allows public safety vehicles to intervene in the normal operation of traffic control systems using wireless communications installed on traffic intersections and certain authorized City public safety vehicles. As the City public safety vehicle approaches a traffic signal, it is recognized by the traffic signal controller through an infrared light wave. The normal green-yellow-and-red cycles can then be interrupted to change the light to green.

B. Purpose

The purpose of this procedure is to establish guidelines for the use of a Traffic Signal Preemption system by the Clive Public Works Department. Traffic Signal Preemption provides the following benefits:

- Optically detects the approach of vehicles needing enhanced right of way
- Requests the “green light” for the highest priority vehicle approaching the intersection up to 2500 feet away
- Clears traffic ahead of the approaching vehicle and keeps traffic moving steadily and safely
- Holds the “green light” until the approaching vehicle is safely through the intersection

C. Guidelines for Use

Clive Public Works vehicles equipped with a preemption emitter shall be authorized to activate preemption at the following times:

- Snow plowing while in tandem including last truck curbing mains.
- Crack sealing.
- Main line paint stripping operations with truck mounted painting unit.

D. Testing and maintenance

Clive Fire Department shall test all intersections with Emergency Vehicle Preemption one time per quarter. Initial malfunctions shall be confirmed by using a different Fire Department vehicle, recognizing that inclement weather or line-of-sight obstructions may cause the system to not operate properly. Confirmed malfunctions shall then be reported to Public Works for repair. Public Works will use its best efforts to repair any confirmed malfunctions

in a timely manner. The system uses vehicle identification codes and can be checked at any time.

E. Equipment Operator responsibility

Equipment operators shall pay close attention to the traffic signals at intersections for which the preemption system has been activated and proceed with due caution.

The Public Works department operates on a Low Priority designation within the preemption system operational hierarchy. Equipment operators shall recognize that the traffic signal preemption system does not guarantee control of the intersection. Other public safety vehicles, such as emergency vehicles, will have a higher priority than Public Works and will gain control of the intersection from opposing or perpendicular directions. Inclement weather or line-of-sight obstructions may cause the system to not operate properly. Preemption systems and traffic control equipment are electronic devices, so failure of electronic components is possible in both of these systems.

The traffic signal preemption system shall only be used by Public Works employees as defined within this policy or otherwise authorized by the department director. Any abuse of the traffic signal preemption system will not be tolerated and the employee/s abusing the system may be subject to disciplinary action up to and include termination.